Objections

Claim 1 was objected to because of informalities. Claim 1 has been cancelled by this Amendment and the elements of Claim 1 have been incorporated into Claims 2, 4, 11, 13 and 16. The informality cited in the Office Action has been corrected in these claims.

35 U.S.C. 112 Rejections

Claims 11, 12, 15 and 21 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 11 has been amended to overcome this rejection. Specifically, Claim 11 now more clearly recites the element of the engagement surface of the tension member being contoured to complement a non-linear engagement surface on the sheave.

Regarding Claim 12, Applicants respectfully disagree with this rejection. Claim 12 is directed to a tension member that is engageable with a traction sheave, with the element added by Claim 12 being that the engagement surface of the tension member is shaped by the outer surface of the ropes encased within the coating layer. The result of this shape is an enhancement in the traction.

Claim 15 has been deleted by this Amendment.

Claim 21 has been amended to provide clarity as to what is meant by "aspect ratio" of the individual ropes.

35 U.S.C. 102(b) Rejections

Claims 1-11, 13, 14, 16 and 18-21 were rejected under 35 U.S.C. 102(b) as being clearly anticipated by Coleman et al.

Applicants respectfully disagree with this rejection. Coleman discloses a feeder or traveling cable that supplies electrical power to an elevator car. This cable does not provide lifting force to an elevator, is not engageable with a traction sheave of the elevator system, and does not include an engagement surface for engaging such a sheave. Further, Coleman does not teach or suggest the claimed invention. The fact that the cable of Coleman is not meant to be used as a traction cable is supported by the proposed S-Z

lay of the ropes as illustrated in figure 1(c). This type of lay is disclosed in Coleman to be used with electrical conductors as a way to shift tensile loads between the strength members and the electrical conductors. Cables having the configuration disclosed in Coleman, with or without the electrical conductors, are insufficient for the stress levels to which elevator traction ropes are subjected.

Claims 1, 2, 5-11, 13, 14, 16 and 18-21 were rejected under 35 U.S.C. 102(b) as being clearly anticipated by Puzik.

Applicants respectfully disagree with this rejection. Puzik discloses a continuous belt for a belt drive mechanism. It does not disclose a tension member for providing lifting force to an elevator system, nor does it disclose a tension member including an engagement surface for engaging a traction sheave of the elevator system. Further, Puzik does not teach or suggest the claimed invention. A drive belt for an automotive application is clearly not sufficient as a tension member to support elevator loads. In addition, drive belts such as these are closed loop and unidirectional. Neither of these features is practical as an elevator tension member.

Claims 1, 7, 11 and 16 were rejected under 35 U.S.C. 102(b) as being clearly anticipated by U.K. 1,401,197 or Pearson or SU 1216120 or Meurer.

Claim 1 has been cancelled by this Amendment and Claim 7, which remains pending, has been made dependant upon Claim 2. Therefore, this Amendment makes the rejections of Claims 1 and 7 moot.

As for Claims 11 and 16, each item of prior art will be addressed separately. Both U.K. 1,401,197 and Pearson disclose the use of flat, steel straps as elevator ropes. The straps are formed from laterally continuous steel. As such, these straps are very stiff in the lateral direction and are not compliant to variability of the sheave contour. Further, the engagement surfaces disclosed in both references are smooth and flat. Neither of these references disclose or suggest the use of tension members having an engagement surface that is shaped or contoured. As claimed in Claim 11, the contoured engagement surface provides a mechanism to enhance the traction of the tension member. As claimed in Claim 16, the shaped surface provides a mechanism to guide the tension member. In both U.K. 1,401,197 and Pearson the traction is provided by the surface interaction

between the smooth surface of the steel strap and the guidance of the ropes is provided, if at all, by other mechanisms.

SU 1216120 discloses the use of a toothed belt engaged with a mechanism that lifts the toothed belt over a stationary toothed disc. This reference does not disclose a tension member having an engagement surface engageable with a traction sheave. Further, this reference does not suggest or teach the claimed invention. The device disclosed in SU 1216120 teaches stationary toothed discs engaged with complementary toothed belts. The elevator car is not moved by traction forces but by the lifting force of the multi-roller carrier, with the toothed belt and disc engagement providing a mechanical holding mechanism. Such a device, if it even works, is not practical in elevator applications.

Meurer discloses a drum type device to move sludge collectors in a basin. The tension members in this device are formed from steel tape, which, as discussed above with respect to U.K. 1,401,197 and Pearson, has the limitation of being flat, smooth and laterally stiff. Further, Meurer does not disclose tension members that provide lifting force to an elevator car. The tension members disclosed in Meurer move sludge collectors laterally along the basin. There is not disclosure or suggestion that such a device could be used to lift an elevator car. In addition, the driving mechanism of Meurer is a drum type machine. The tension members disclosed in Meurer do not have an engagement surface to engage a traction sheave since there is no traction sheave. This engagement surface in traction systems uses friction to provide the mechanism for moving the elevator loads and the mechanism to hold the elevator car. In drum drive systems such as Meurer or other winch type systems, the tension member is fixed to the drum to provide both the force to move the loads and the holding force for the loads. Therefore, such systems do not disclose or teach tension members having engagement surfaces for engaging a traction sheave.

35 U.S.C. 103(a) Rejections

Claims 3 and 4 were rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Puzik in view of Coleman.

Applicants respectfully disagree with this rejection. First, the combination of these references is not proper. Coleman, as discussed above, is an electrical feeder or traveling cable and is not a traction or suspension rope for elevators. Therefore, it does not disclose a rope that can be used to move an elevator car. Puzik, as discussed above, is a continuous belt for a belt drive mechanism. One skilled in the art of belt drive mechanisms would not look at electrical cables for use with drive belts. Second, the combination, even if proper, does not disclose or suggest Applicants' invention as claimed in Claims 3 and 4. Puzik discloses a drive belt to transfer rotational energy from a first pulley to a second pulley. Coleman discloses a traveling cable to provide electrical power to a car. There is no disclosure in Puzik or Coleman of a tension member to provide lifting force to a car of an elevator.

Claim 17 was rejected under 35 U.S.C. 103(a) as being unpatentable over Greening in view of Coleman.

Applicants respectfully disagree with this rejection. First, the combination of these references is not proper. Coleman, as discussed previously, is a traveling cable and not a traction or suspension rope for an elevator. Therefore, it does not disclose a rope that can be used to move an elevator car. Greening discloses the use of conventional round, wire ropes as the tension member in elevators. As discussed above, one skilled in the art of traction ropes for elevators would not look at electrical cables for use as an elevator hoist rope. Second, the combination, even if proper, does not disclose or suggest Applicants' invention as claimed in Claim 17. There is no disclosure in Greening or Coleman of a tension member having a coating layer with an engagement surface that is shaped by the outer surface of the ropes within the coating layer.

Claim 22 was rejected under 35 U.S.C. 103(a) as being unpatentable over Coleman or Puzik.

Applicants respectfully disagree with this rejection. As discussed above, Coleman discloses a traveling cable, not a traction rope, and Puzik discloses a continuous belt for a belt drive mechanism. Therefore, neither reference teaches or suggests a tension member as claimed in Claim 22. Further, as acknowledged in the Office Action, neither reference discloses a tension member having individual ropes that are flat is

cross-section. The advantage of such ropes is an improved load distribution in both the individual ropes and the coating layer.

New Claims

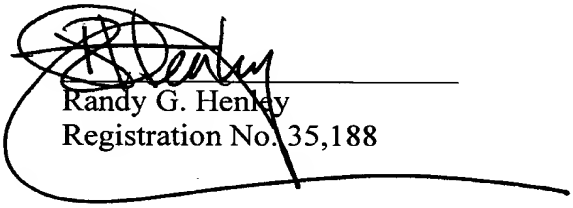
New Claims 66-75 have been added by this Amendment. Claims 66-70 are directed to similar subject matter as claims 2, 4, 11, 13 and 16, respectively. Claims 71-75 are directed to elevator systems having the features of claims 2, 4, 11, 13 and 16, respectively.

Conclusion

Inasmuch as neither the structure nor function of Applicants' invention has been anticipated or made obvious, Applicants respectfully request reconsideration of the rejections of the pending claims and, upon such reconsideration, allowance of the pending claims. In addition, consideration and allowance of new claims 66-75 is respectfully requested.

Please charge any fee for this statement to Deposit Account No. 15-0750, Order No. OT-4190.

Respectfully submitted,
PEDRO S. BARANDA, ET AL.



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